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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,765	12/28/2000	Mitchell R. Swartz		8044

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EXAMINER	
PALABRICA, RICARDO J	
ART UNIT	PAPER NUMBER
3641	

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

SK

Office Action Summary	Application No.	Applicant(s)	
	09/750,765	SWARTZ, MITCHELL R.	
	Examiner	Art Unit	
	Rick Palabrica	3641	

-- The MAILING DATE of this communication appears on the cover sheet with th correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *11 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-19,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Applicant's Amendment in Paper No. 13, dated 12/9/02, is acknowledged. This amendment revised claims 1, 3, 4, 6, 12, 13 and 19, added new claims 21-22, and traversed the rejection of previously examined claims. This amendment is in response to Office Action dated 11/22/02.

2. The Examiner stated in said Office Action that the current application does not qualify as a continuation of S/N 09/760,970 because of differences in subject matter covered. Applicant addressed this problem by deleting references to "fuel cells", replacing "hydrogen storage" with "hydrogen loading" and deleting "pressure" in the term "pressure-loaded" metals in the statement of relevance of the claimed invention. This change would still nct qualify the current application as a continuation of S/N 09/760,970 because there are still significant differences in the subject matters oft eh two applications. The parent application refers to "electrochemical nuclear fusion in or about metals" that is different from the broader subject matter of "electrochemical reactions in or about metals" in the current application. Also, the parent case specifically highlights the relevance of the claimed invention to "cold nuclear fusion in pressure loaded metals" whereas the current case deletes the "cold" term and refers only to "nuclear fusion in loaded metals." Accordingly, the current application cannot claim priority to the 9/17/91 filing date of the S/N 09/760,970.

3. The amendment is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material, which is not supported by the original disclosure, is as follows:

- Patent Applications 08/406,457 and 09/573,381 shown underlined under "U.S. Patent Documents" on page 96, all references shown underlined under "Other Publications" on page 97, as well as all citations to these references in the revised specification.
- Change from "applied magnetic field" to "applied spatially inhomogeneous magnetic field", shown as underlined in amended claim 12.

Applicant is required to cancel the new matter in the reply to this Office Action.

4. In the traverse of the examiner's objections to the disclosure because of lack of enablement, applicant alleged that the missing descriptions can be found his previous applications such as 08/406,457, 07/371,937 and 09/339,976. See for example the response on page 68 of the Amendment. Applicant incorrectly refers to his patent applications as "patents" to justify their use as references in addressing the objections. These are not acceptable because they are not patents and 08/406,457 constitutes new matter, as stated in section 3 above. Also, even though 07/371,937 and 07/339,976 are listed on page 3 of the original application, they have not been incorporated by reference in the disclosure, and the subject matter discussed therein are not part of the current application.

5. Contrary to the requirement in 37 CFR 1.111, applicant did not reply to every ground of objection and rejection in the previous Office Action. Example of these include the rejection of the claims under 35 U.S.C. 112, second paragraph in section 7 of the previous Office Action because: a) the claims are vague, indefinite and incomplete as what is actually the "product" of the claimed invention; b) failure to recite the additional critical structure of method steps to produce applicant's indicated heat energy and nuclear reactions. Accordingly, the outstanding objections and rejections are repeated and shown in **bold** in this Office Action.

6. As to the rejection of claims because of indefiniteness, applicant alleged that "the Examiner could not have made the rejection under 35 U.S.C. 102 of claims over Furuya or Wooley, etc. had the invention truly been without definiteness." This allegation has questionable basis. The claims were indefinite but they had to be examined because of the provision in MPEP 2106.II, which states,

> "Under the principles of compact prosecution, each claim should be reviewed for compliance with every statutory requirement for patentability in the initial review of the application, even if one or more claims are found to be deficient with respect to some statutory requirement."

7. Applicant traversed the rejection of the lack of enablement and lack of utility of the claimed invention on the grounds that his invention "solves the long-standing problem of controlling hydrogen flow in metals and extracting product using magnetic inhomogeneity" (see page 94 of the Amendment). He also alleges that the examiner mistakenly labels his invention as "cold fusion" instead of a "two-stage process involving

loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid {'catastrophic'} flow of loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities" (see page 75 of the Amendment). Applicant further alleges that the invention is about "loading of a material (palladium) with hydrogen which is neither unproven 'theory' nor 'incredible' as the Examiner falsely claims (see page 58 of the Amendment)."

The Examiner disagrees for several reasons.

The objections and rejections are not directed to the loading of palladium by hydrogen but to generation of "excess heat", which is the "product" of the claimed invention. As stated in the previous Office Action, the specification contains references throughout to the production of "desired reactions" with the isotopic fuel (e.g., deuterium) upon full charging of the cathode with deuterons and, the production of a change in quantity of the deuterium in the cathode.

The specification on page 5 and page 26, identifies these "desired reactions" as electrochemically-induced, nuclear fusion reactions in metals (such as deuterium-loaded palladium). Hence the only possible "products" that can be formed in the disclosed and claimed method are nuclear fusion products (e.g., tritium), as recited on page 31, line 10. Indeed, such is even attested to by applicant's alleged parent application S/N 07/760,970, as well as the two applications referred to on page 3 of the applicant's specification.

Additionally, the specification on page 5, lines 9 and 10, on page 19, top paragraph, and page 21, 3rd paragraph, refers to the generation of "excess heat", by

the desired reactions of the isotopic fuel (e.g., deuterium) in the loaded cathode metals. Said heat energy being directed out via heat pipes and thermal bus.

This reference to production of electrochemically-induced "nuclear reactions" and "excess heat" within an electrolytic cell has become known in the art as "cold fusion." Therefore, the objections and rejections based on "cold fusion" are appropriate.

8. The applicant traversed the use of Westfall in the rejection of the claims. The grounds cited by the applicant and the corresponding responses of the examiner (in italics) are as follows:

a. The application was filed prior to Westfall. *Westfall's patent has a priority date of April 25, 1990 that is more than one year prior to the 12/28/00 filing date for the current application.*

b. Westfall does not have the purpose, advanced technology, features and advantages of the claimed invention. *These are immaterial because the claims define the invention and the claims are the ones examined for patentability. The examiner has shown that Westfall's process and apparatus read on the applicant's claims, and therefore, Westfall anticipates the applicant's claims.*

c. Westfall's electrode keeps moving unlike the claimed invention. *This is immaterial. The feature cited by the Applicant is non-limiting because it is not recited in the claims. Note that although claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).*

d. Materials and elements used by Westfall would not function if used in the claimed invention. Conversely, the materials and elements used in the invention would not function in Westfall's invention. *The rejection was based not on the swapping of materials and elements, but whether the claimed method steps and apparatus elements are identical to or could be read into the prior art, which is the case for Westfall*

e. Westfall loads hydrogen outside the metal instead of inside the metal. *Westfall discloses palladium as working electrode and his electrolyte is an aqueous solution that inherently contains hydrogen. Palladium is known to absorb deuterium, i.e., be loaded inside the metal. Applicant himself admits this as a well-known scientific fact by his claims.*

f. "It is nonsense to consider Westfall's crystal growth being product removed through the growing metal crystal as the same as heat produced in the present invention." *This is precisely the point raised by the examiner on page 19 of the previous Office Action that rejected the claims because they are incomplete in failing to recite additional critical method steps and/or structure. Westfall anticipates the applicant's method and claims but he does not claim production of excess heat. Therefore, there must be a critical feature of the claimed invention that is missing in the disclosure.*

9. The applicant traversed the use of Paterson ('675) and Paterson ('688) in the rejection of the claims. The grounds cited by the applicant and the corresponding responses of the examiner (in italics) are as follows:

a. The application was filed prior to Paterson ('675) and Paterson ('688) *Paterson ('675) has a priority date of June 7, 1994 and Paterson ('688) has a July 20, 1993 priority date. Both were filed more than one year prior to the 12/28/00 filing date for the current application.*

b. Paterson is not the same as the claimed invention. *The examiner has shown how Patterson's process and apparatus read on the applicant's claims, and therefore, the Paterson patents anticipate the applicant's claims.*

c. The claimed invention minimizes electrolysis unlike Paterson, the claimed invention methodically controls temperature unlike Paterson, and there are some reduction in accuracies in the experimental results from Patterson's inventions .*The features cited by the Applicant are non-limiting because they not recited in the claims. Note that although claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).*

d. If the claimed invention is used in Patterson, it would not work. *The rejection was based not on the swapping of materials and elements, but whether the claimed method steps and apparatus elements are identical to or could be read into the prior art, which is the case for the Patterson invention.*

10. The applicant traversed the use of Kinsella in the rejection of the claims. The grounds cited by the applicant and the corresponding responses of the examiner (in italics) are as follows:

a. Kinsella does not have the purpose, advanced technology, features and advantages of the claimed invention. *These are immaterial because the claims define the invention and the claims are the ones examined for patentability. The examiner has shown that Kinsellal's process and apparatus read on the applicant's claims, and therefore, Kinsella anticipates the applicant's claims.*

b. Kinsella uses a stainless steel cathode, uses no loading and does not have a two-stage process. *Stainless steel can have a composition that contains Zr (Group IVb metal) and/or Ta (Group Vb metal)both of which are suitable "loading" materials as per claims 2 and 15. The second applied electric provides the second stage of the process.*

c. Kinsella recites features that are not needed in the claimed invention. *This is immaterial because the claims recite the inclusive, open-ended transitional term "comprising", which is synonymous with "including", "containing", or "characterized by". The term, "comprising" does not exclude additional, unrecited elements. See, e.g., MPEP 2111.03 and Genentech, Inc, v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim).*

d. If the materials and elements of Kinsella are used in the claimed invention, they would not function. *The rejection was based not on the swapping of materials and elements, but whether the claimed method steps and apparatus elements are identical to or could be read into the prior art, which is the case for Kinsella.*

e. Kinsella loads outside the metal instead of inside the metal. in the claimed invention *Kinsella discloses a material containing Zr and/or Ta, which can be loaded from the inside. Applicant himself admits this as a well-known scientific fact by his claims.*

11. The submitted declarations have been fully considered but found unconvincing because of one or more of the following reasons:

a) They appear mainly directed to opinions and conclusions unsupported by facts (e.g., Ahern, Kurzweil, Miles, Rotegard and Storms). See *In re Pike et al.*, 84 USPQ 235. No weight is given to an opinion declaration on the ultimate legal conclusion in issue. See *In re Lindell*, 155 USPQ 251.

b) They are not relevant to the technical subject of the application, e.g., Verner, Fox, Bass that pertain more to complaints about the Patent Office, and Chubb, Ahern, Mallove and Fox that pertain to loading and not to excess heat generation in the claimed invention.

c) They were submitted in support of a different application, have been previously considered on appeal, and applicant's petition denied (e.g., Mallove, Verner, and Strauss). Additionally, the applicant did not establish the relevance of these declarations to the current application.

d) They deal with issues in the cold fusion area that have since been either discredited, abandoned, found defective or else overtaken by events (e.g., Mallove on the Japanese cold fusion research). These are discussed in the section that follows.

e) They do not appear to have been declarations of disinterested parties (e.g., Swartz, Rotegard).

Specification

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. The Specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and /or use the invention, i.e., failing to provide an enabling disclosure.

Applicant's arguments are unpersuasive in view of the reasons stated in sections 4-11 above and those given below.

The Examiner has established in section 7 that the Applicant's invention is in the field of "cold nuclear fusion." Statements made by the Applicant himself cast doubts the claimed invention. For example:

a. In Ref. V1, when asked whether the issue of neutron production in cold fusion has been resolved, the Applicant replied that "neutronpenic levels can occur intermittently under some conditions." As correctly observed by the inquirer, "intermittently" and "under some conditions" places cold fusion on shaky grounds. Based on this, the disclosure of the current application is insufficient as to: a) what are

the specific conditions under which said neutronpenic levels can occur?; b) if said neutronpenic levels occur intermittently, what are the features necessary to ensure they occur and what confidence does one have on the reproducibility of the results, if indeed cold fusion truly occurs? In reply to a later question as to whether there is an established level of tritium production in relation to excess heat, He-4 production, and any other experimental parameter, the Applicant stated that there are "multiple pathways which depend upon material (and other) parameters. Based on this, the disclosure is insufficient as to: a) what are these material properties and what exactly are these "other parameters"; b) when applied to the electrodes in the claimed invention, what are the required purities for the cathode, anode and electrolyte (see page 13 of previous Office Action).

b. In Ref. W1, an individual noted that the Applicant first made a statement that "cold fusion is real" and then later on stated that "a single experiment demonstrating excess heat is insufficient to convince, but only shows a vector for further diligent work and study. The individual then stated, "to convince me of your (i.e., Applicant's) statement, that cold fusion is real, you need to show me at least one paper reporting clear, convincing, reproducible, unmistakable heat production."

c. In Ref. X1, Dick Blue stated on the issue of confirmation of cold fusion results that "four years into this business, it seems we are still counting the simple replications of 'excess heat' and failing to note that none of the replications match in any significant additional details."

d. In Ref. U2, Rich Murray raised questions about the Applicant's paper, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena With the Quasi-1-Dimensional Loading Into a Material." Murray noted that for evaluation, details such as exact dimensions and locations of components of the

calorimeter are needed. Murray also expressed concern about error ranges being so large. It is noted that the Applicant cited this paper in his response to the Examiner's objection to insufficiency of the disclosure regarding the power supply (see page 105 of the previous Office Action). In Refs.V2 and W2, Dick Blue lays out why there are problems with the "cold fusion" process.

Note that there has essentially been a continuing stream of publications from 1989 on showing that virtually none of the scientific community considers the alleged positive results of "cold fusion" experiments as being confirmed. In this respect, attention is directed to Ewing et al., Albagli et al., Bosch et al., Fleming et al., Balke et al., Nova, Hizenga (I), Huizenga (II), Huizenga (III), Huizenga (IV), and Rogers et al. These references provide further clear evidence that no excess heat is generated in such "cold fusion" systems nor is there evidence of nuclear reactions taking place.

As to some of the Japanese claims of positive cold fusion results, note the comments of David Williams in the Hadfield article on page 10 of the 10/31/92 issue of the New Scientist. David Williams (Head of the Chemistry Department, University College London) described the claims as "absolutely pie-in-the-sky."

Note also the negative comments in Huizenga (I) as to some of the Japanese work in cold fusion (e.g., see pages 240, 246, 251, 252, 277-281).

Williams et al., Broad and NOVA refer to some of the spurious effects, faulty data, etc., which have led to some claims of the existence of cold fusion.

The Dagani article in the 1/14/91 issue of C&EN states that the "cold fusion" claims are taken seriously by virtually none in the scientific community and that research at Utah's National Cold Fusion Institute (NCFI) as well as research elsewhere, has failed to establish the existence of cold fusion.

A more recent article by Dagani (in the 6/14/93 issue of C&EN) entitled, "Latest Cold Fusion Results Fail to Win over Skeptics", states that "the vast majority of scientists ... dismissed the evidence of nuclear fusion results inside a metal lattice as nonsense – a case study in pathological science."

Note particularly the excerpts from the book, "Too Hot To Handle", by Frank Close. This book refers to various errors in the work of Fleishmann and Pons (F and P), e.g., see pages 161+, as well as by other experimenters (note particularly the comments on excess heat in calorimetry on pages 351-353).

In this same vein, note the analysis of calorimetry with electrolytic cells of the F and P type, set forth in Wilson et al., as well as the comments concerning possible errors in heat measurement by Jones (on pages 284, 285 of Surface Coatings Technology) and by Albagli et al.

Hilts states that the MIT experiments failed to produce any of the excess heat reported by the Utah group.

Lewis et al. state that in the summary on page 525 that they found no evidence of excess enthalpy in their experiments and they refer to various possible sources of error that could lead to the erroneous conclusion that excess heat was produced (note pages 528-530).

Both Hilts and Lewis et al. indicate that in any determination of excess heat, one must determine the total energy produced (as heat and chemical energy) integrated over the whole period of cell operation, versus the total energy input.

Another document showing how experimental data, etc., can be misinterpreted as providing evidence of the operability of cold fusion systems, is the transcript of the television show NOVA entitled, "Confusion in a Jar", which indicated that in these cold fusion experiments, it is fairly easy to get quick results which could be "interpreted" as

providing evidence of "cold fusion" but that in very carefully run experiments that were rechecked, etc., such as by using several different methods and/or detectors to attempt to detect the same presumed experimental results, the end result was negative.

The Broad article in the 3/17/91 issue of the New York Times indicates that some of the data relied on the F and P as showing evidence of fusion was faulty.

The article by Taubes on pages 1299-1304 of the 6/15/90 issue of Science, explains why the alleged detection of tritium at Texas A & M cannot be relied on as evidence of "cold fusion" actually taking place.

In a 1992 article in Surface and Coatings Technology, Jones takes the position that the claims of excess heat, tritium and helium production due to nuclear reactions as "dubious to say the least" (note page 288) because there is no evidence of commensurate nuclear products. Note the reference to $E=mc^2$ on page 286.

In the Taylor et al. article (co-authored by Jones), which was submitted to the Fourth International Conf. On Cold Fusion (held in December 1993), it is stated in regard to the detection of neutrons from their cold fusion experiments, "The results do not provide compelling evidence of neutron production" (note particularly the abstract and pages 6, 7, 9 and 10).

Taubes, "Bad Science": The Short Life and Weird Times of Cold Fusion", 1993, is a good reference for showing the view point of the scientific majority towards cold fusion. After reviewing 250 people in the field, Taubes concluded that "Cold Fusion ... did not exist", and "As long as financial support could be found, the research would continue ... In fact, the few researchers still working in the field would have little incentive to acknowledge negative results as valid, because such recognition would only cut off their funds." Note page 426.

Another good reference presenting a compilation and analysis of cold fusion work subsequent to the 1989 announcement of the cold fusion claims of F and P, is the book, "Cold Fusion: The Scientific Fiasco of the Century", by Huizngа (I). Huizenga was co-chairman of the DOE/ERAB panel on cold fusion. Note particularly the "Epilogue" on pages 237-287 that discusses some of the alleged positive results presented at the First, Second and Third Conferences on Cold Fusion.

On pages 201+ (and more particularly, page 214) Huizenga (I) indicates cold fusion can qualify or be characterized as "pathological science", defined as "the science of things that aren't so" (see also, Huizenga (II), Huizenga (IV) and Rousseau in this respect).

Morrison (III) in Trans. Of Fusion Technology, sets forth various criteria to be followed in doing cold fusion experiments and of problems that can arise.

Jones et al. (II) and Jones et al. (IV) debunk the positive cold fusion climes of Miles et al. at the Naval Research Lab. in China Lake, showing how experimental errors, etc. can give false impression of positive results.

Jones et al. (III) and Shkedi et al. show how faradic efficiencies of less than 100% during electrolysis of water can account for reports of excess heat in "cold fusion" cells.

It is particularly pointed out that "reproducibility" must go beyond one's own lab. One must produce a set of instructions, a recipe, that would enable anyone in their own independent lab to produce the same results. If reproducibility only occurs in one's own lab, errors (such as systematic errors) would be suspect.

As a further issue in regard to reproducibility, experimenters who previously found evidence of excess heat, found no evidence of excess heat when better

calorimetric equipment was used (see section 2.2 on page 2 of Morrison (IV) (note that such refers to the work at HVIRA (Japan)).

It is considered elementary that identical structures operated in identical manners, must produce identical results. Such is even relied on in one's every day life.

In this respect, Murray (I), Murray (II), Murray (III), Murray (IV), Jones et al. (II), Jones et al. (III), Jones et al. (IV), Jones et al. (VI), Green et al., Shelton et al., and Merriam et al., discuss some of the possible sources of errors in the calorimetry that can lead to erroneous conclusion that excess heat was present.

Murray (II) (particularly pages 5 and 6) show how ICP-MS data can be misinterpreted as providing evidence of nuclear transmutation. Note also in this respect , the negative comments concerning nuclear transmutations in cold fusion cells, on pages 7 and 8 of Morrison (IV).

Note the statements (reproduced below) concerning nuclear transmutation on page 1 of Segment 2 of Bass.

"Scott's second epistle recapitulates what we learned from reams of data from Miley's and the Cincinnati Group's trans mutation data. No reasonable evidence for transmutation exists once allowance is made for the innumerable ways complicated and subtle instrumentation can be wrong. You see, we can't even determine those remarkable systems something as simple as 10 ppm Zn in pure Li_2SO_4. Prejudiced and desperate attempts to quickly survey complex unknown samples results in 'data stew'".

Note also that page 2 of Segment 1 of Bass indicates that errors can easily occur in ICP/MS when working on unknown and/or unusual samples. Said page 2 states that different labs using samples split from the same reagent grade Li_2SO_4 cam up with differing amounts of Zn as being present in Li_2SO_4. See the 5th paragraph on page 2 that states:

"The Aldrich lot analysis showed 4 ppm Zn. The old lab got 9 ppm Zn. The new lab got 51 ppm Zn. I told the new lab what the other two results were and asked them to repeat their analysis, they managed to come up with 31 ppm Zn the second time."

Morrison (V) produces a good report on the 5th Cold Fusion Conference and Morrison (IV) (discussed above) provides a good report on the 6th Cold Fusion Conference.

Note also the negative comments concerning cold fusion in Hoffman.

For a good up to date overall analysis of the present status of Cold Fusion/Low Energy Nuclear Transmutations (CF/LENT), attention is directed to the Memo (dated 10/9/97) from Bennett Miller to Dr. Robert W. Bass.

The Miller Memo indicates Dr. Bass had requested the Department of Energy to do a new, full-scale review of the Cold Fusion/Low Energy Nuclear Transmutations (CFALENT) phenomena because of what Dr. Bass considered to be "emerging evidence of progress".

The Miller Memo indicates DOE's response was to commission Mr. Miller to do the review.

Page 3 of the Miller Memo indicates the vast amount of documents, etc. reviewed and considered by Miller in arriving at his conclusions.

Basically, the conclusion of the Miller Memo is that there is still no concrete evidence of excess heat, etc. Note particularly the following excerpts from the Miller Memo.

"The core problem that I have with CFALENT is the disconnect between the public pronouncements of it's proponents regarding the imminent commercial availability (nay, already established commercial availability if I am to believe the press clippings) of such systems and the somewhat more private and negative developments that seem to emerge at every turn.

Most prominent, but still only three among many such examples of the former, are first, the Cincinnati Group's recent representations regarding a revolutionary approach to the nuclear waste remediation problem --- representations that you openly endorsed as revealed truth; second CETI's equally bold guarantee of a CF cell that put out aneutronic, excess heat on a reliable, predictable basis. And third, your vouching to me, some time ago, for the imminent, commercial installation and operation of a CF power system in a hotel/resort complex that is currently under construction.

Moreover, the casual reader, picking up any issue of Infinite Energy, for example, would be hard pressed not to conclude the CFALENT is a closed matter as far as demonstrating scientific feasibility is concerned. Around the world, governments and industries are successfully demonstrating the phenomena of excess heat, at the very least. If so, no further development, let alone research, is needed or desired. What possible should or could your governments' federal research and development community play when its charter is to support primarily that work that the private sector can not or will not do on its own?

At the same time of course, more careful attention to what is going on suggests that not all is what it seems to be. The CG approach to nuclear transmutation is at best mired in controversy of the most basic sort. There is no verification of initial claims. There is no explanation of the basic process. A recent attempt to verify the process by a third party in one of DOE's national laboratories was, in everyone's opinion, a failure; though it can be argued that the test were inconclusive for a number of reasons. The CETI cell has similar problems. The hotel project with the 500 kw CF power plant, about which you we were so enthusiastic, has been delayed indefinitely. And, the Japanese have terminated their three-year multi-million dollar effort to demonstrate and commercialize cold fusion.

Perhaps this evidence that all is not well can be explained by sloppy science, or just complicated science, or financial difficulties unrelated to science, or by governmental mismanagement, or by pressure to move in different directions, though in the case of Japan that is hard to believe. Your assertion that the Japanese government has applied pressure internally to disband the effort flies in the face of all logic.

If any nation accords energy matters a higher priority than the Japanese, I do not know of it. If cold fusion is real, demonstrable, or reproducible it would mean more to the Japanese than any other industrialized nation. It would be a harbinger of the ultimate energy security that they have been seeking for the past 70 years -- a security of energy supply that was one, if not the most, important determinant of their willingness to go to war in 1941. What possible motive could there be to disbanding an effort that advocates of CF/LENT expected to succeed, except that perhaps it was not?

In fact it is my current understanding that the NHE program was disbanded precisely because it could not meet its primary objective of a concrete demonstration of excess heat, even after three years of work and an expenditure of over $30 million. There have been claims made that the effort was poorly managed -- that emphasis was incorrectly given to building a precommercial infrastructure at the expense of doing the science that needed to be done. If so, that is truly a sad state of affairs. But if it is true, I believe it will be corrected in fairly short order if for no other reason than that the

stakes are so large. Nonetheless, the effort by a major industrial nation to mount a successful, ministry-sponsored, CF program can not be characterized as any thing other than a failure at this point.

This line of inquiry brings us back to the fundamental dilemma. If CF/LENT is as real as some of the scientific results presented at respected scientific meetings (or as real as its press clippings), then it is already well beyond the stage where federal tax dollars are needed. It is a commercial reality, or so close that the private sector should be jumping at the business opportunity of a lifetime-- the opportunity to capitalize on a discovery of momentous proportions that is relatively uncluttered by government claims to prior knowledge or prior invention.

If on the other hand CFALENT is still in the nascent stage where nothing is really clear and where the prospect still exists that all is artifact and anecdote, then there is only one prudent course for practitioners to follow -- go back to basics and systematically subject the phenomena to careful examination by the time -tested process of merit-based, peer-review.

I believe, as I have already stated, that I think there are good things to be done in this arena. New ground to be broken. New discoveries to be made. New industries created. But only after the basic science has been illuminated and accepted by the scientific community at large. That is how we, as a nation, have built the greatest scientific establishment in the world. I urge you and your colleagues to accept the challenge. Come forward. Present proposals. Abide by the process."

Note that Blue (like the Miller memo above) , also refers to Japan as dropping the funding for cold fusion research.

It is also noted that there has apparently been a court decision on cold fusion in Italy (e.g. see Italy-Cold Fusion & Judge's Verdict).

Note that these references cited by the examiner show how experimental data, etc. can be misinterpreted as providing evidence of the operability of cold fusion systems.

Accordingly, all of the issues set forth in said previous Office action regarding lack of enablement are still pertinent in determining the patentability of Applicant's claims. Specifically, the following items were not addressed in the applicant's amendment are now repeated (in **bold letters**):

On page 11, lines 9+, an equation is given for the spatial distribution of deuterons, $D^{+}(z)$. However, there is neither an adequate description nor enabling

disclosure of how in what manner this distribution was derived from the molecular flux, $F(D^+)$. For example,

- **The disclosure is insufficient as to how and what losses, if any, are exactly accounted for in the equations (e.g., loss due to deuteron gas evolution from the bulk solution).**
- **The disclosure is insufficient as to what exactly are the approximations made to arrive at $D^+(z)$, in addition to the disclosed approximation of no free charge density.**
- **The disclosure is insufficient as to which parameters on the right hand side of the $D^+(z)$ equation are spatially dependent. Note that this equation defines the spatial distribution of the deuterons.**

On page 16, lines 6+, the applicant discloses an equation for the deuterium partial pressure, P_{D2}. However, the disclosure is insufficient as to what exactly are the terms "α" and "n" .

On page 18, lines 12+, the applicant discloses an equation for the fractional saturation, y_D. However, the disclosure is insufficient as to what exactly is the term "c_1".

On page 25, lines 7+, the applicant discloses a cluster of seven CAM devices that is supported and thermally coupled by epoxy. However, there is neither an

adequate description nor enabling disclosure of how and in what manner epoxy can so maintain the devices in a stacked configuration (i.e., not fall apart), especially during the period when the alleged astronomical pressures are developed.

On page 27, lines 3+, of the specification, the applicant discloses that the three CAM devices are clipped to a holding board and then inserted into the fusion receptor apparatus shown in Fig. 12. There is neither an adequate description nor enabling disclosure of how and in what manner the said three devices are so held in place by clips. Also, there is neither an adequate description nor enabling disclosure of how and in what manner the said three devices can be inserted into the receptor apparatus while they are clipped to the board. The applicant also states that some clips are electrically conductive and some are insulators. The disclosure is insufficient as to which components exactly receive the conductive clips and which components get the insulator clips.

On page 32, lines 4+, the applicant discloses that the products are removed at the product barrier. However, there is neither an adequate description nor enabling disclosure of how and in what manner said products are so removed.

Applicant's claimed method of low temperature el ctrolytic nuclear reactions is practiced on an apparatus of non-cold fusion art (e.g. Westfall [U.S. 5,215,631] or Kinsella et al. [U.S. 3,682,806] or Patterson [U.S. 5,318,675] - hereinafter referred to as Patterson -1, or Patterson [U.S. 5,372,688] - hereinafter referred to as Patterson-2) that
is identical to the applicant's, and, these apparatuses are all operated in an identical manner, i.e., as an electrolytic cell. Even more importantly, note that Lewis et al. searched for low temperature nuclear fusion in a system and manner of operation identical to that recited in applicant's claims (note the reference to oscillating current pulses and abrupt current steps in the second column of page 525), but with negative results!

Note that it is well-settled case law that identical apparatuses operated in the same manner, must produce identical results.

There is accordingly, neither an adequate description nor enabling disclosure of how and in what manner, applicant's invention is able to produce low temperature electrolytic nuclear reactions and excess heat whereas, the identical systems and methods of operation in any one of Lewis et al., Westfall or Kinsella et al., or Patterson-1 or Patterson-2, presumably did not produce said low temperature electrolytic nuclear reactions and excess heat.

Assuming for the sake of argument that applicant's invention does function in a different manner to produce a different result from that of any one of Lewis et al., Westfall or Kinsella et al., it can only be because applicant's invention actually contains some additional critical feature(s), component(s), etc., not found in any of said references which is necessary to enable applicant's invention to function

differently from any of said references so as to be able to produce a different result.

Accordingly, the disclosure is insufficient in failing to disclose said additional critical feature(s), component(s), etc., necessary to cause applicant's invention to operatively function in a different manner to produce a result different from that of said references.

Clearly, when an artisan or experimenter is relying on the experimental results of **particular tests or experiments to establish certain facts, i.e., the production of excess heat and of low temperature nuclear reactions, it is incumbent upon the experimenter to show that the alleged experimental results of excess heat and low temperature nuclear reactions, are valid and not just the results of experimental errors or misinterpretations of experimental data (and that the alleged experimental results do not fall within the limits of experimental errors).**

There is thus no reputable evidence of record to support the assumption and speculation that the invention would actually operate as indicated and produce the desired results as indicated.

It is not seen wherein the specification discloses any particular structure, etc., which is unique to the applicant's system and which would make the applicant's cold fusion system operative whereas the systems disclosed in the above referenced "numerous teachings by skilled artisans," were not operative.

There is neither an adequate description not enabling disclosure of the **parameters of a specific operative embodiment of the invention, including atomic or weight ratio of metal electrodes to electrolyte (e.g. palladium to gel), dimensional ratio of electrodes to their spacing (i.e., sizes of anode and cathode**

relative to the space between them), voltage and current requirements to produce the magnetic field, surface area-to-volume requirement for the reactor, minimum concentration of the isotopic fuel in the cathode necessary for the desired reactions to take place, the exact composition (including impurities and amounts thereof) of the electrolyte and of the cathode and of the anode, etc. These impurities can have an adverse effect on the desired operation of the invention.

As set forth above, the examiner has presented evidence showing that in such cold fusion systems, the claims of excess heat (as well as of other nuclear reaction products), are not reproducible or even obtainable. It consequently must follow that the claims of excess heat or nuclear reactions are not reproducible of even obtainable with applicant's invention. While applicant may have set forth theoretical concepts, it is well known in the cold fusion field that theory and reality have a habit of not coinciding. There is no evidence to indicate that the applicant has so succeeded where others have failed, in arriving at an operative cold fusion system, i.e. that he has progressed his system beyond the point of an unproven theory or concept which still requires an undue amount of experimentation to enable the artisan to make and use the inventive system for its indicated purpose. This view is also considered supported by the failure to set forth a full example of the specific parameters of an operative embodiment. One cannot rely on the skill in the art for the selection of the proper quantitative values to present an operative cold fusion system, since those in the art do not know what would be these values. See *Bank v. Rauland Corp.*, 64 U.S.P.Q. 93; *In re Corneil et al.*, 145 U.S.P.Q. 697.

New claim 1 recites the limitation," providing a diffusion barrier to said diffusion flux of said isotopic fuel within said material." There is no adequate description or

enabling disclosure as to how and in what manner said diffusion barrier is so provided to perform its intended function.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> **Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.**

12. Claims 1-10, 12-19, 21 and 22 are rejected under 35 U.S.C. 101 because the claimed invention as disclosed is inoperative and therefore lacks utility.

The reasons that the inventions as disclosed is inoperative are the same as the reasons set forth in section 11 above as to why the specification is objected to and the reasons set forth in section 11 above are accordingly incorporated herein.

Claim Rejections - 35 USC § 112

13. Claims 1-10, 12-19, 21 and 22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The reasons that the inventions as disclosed are not enabling are the same as the reasons set forth in section 11 above as

to why the specification is objected to and the reasons set forth in section 11 above are accordingly incorporated herein.

14. Claims 1-10, 12-19, 21 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete.

The preambles of method claims 1-10 and 12, and apparatus claims 13-19 disclose a process and apparatus, respectively, for producing a product using a material which is loaded with an isotopic fuel. This implies that the process/apparatus is applied to a material that already contains isotopic fuel. However, the body of the claims disclose supplying and loading said isotopic fuel into the material. These claims are vague, indefinite and incomplete as to whether the process/apparatus supplies and loads additional isotopic fuel to the material that already contains isotopic fuel, i.e., do the claims imply multiple loading of fuel?

The preambles of method claims 1-10 and 12 are directed to a process for producing a product and for controlling the loading of isotopic fuel into a material, and the preambles of claims 13-19 are directed to an apparatus for producing a product, however, the bodies of the independent claims fail to recite a specific step of producing said product, as well as a specific step of controlling said product, and, the claims are hence vague, indefinite and incomplete. See also MPEP 2172.01.

The claims are also vague, indefinite and incomplete as to what is actually the product.

As indicated in sections below any one of Westfall, or Kinsella et al, or Patterson-1, or Patterson-2, illustrate(s) an electrolytic process that is identical to that recited in said applicant's claims. Applicant's disclosure indicates that his process results in the generation of excess heat energy because his apparatus is claimed to have a thermal bus connected to heat pipes (e.g. see top paragraph on page 29).
This implies that the thermal bus-heat pipe combination extracts heat generated by the applicant's apparatus. Neither one of Westfall, Kinsella et al, Patterson-1, or Patterson-2 specifically disclose the generation of low temperature nuclear reactions and the generation of sufficient heat energy such as to require removal thereof. Assuming for the sake of argument that either one of Westfall's or Kinsella et al.'s system is not capable of producing such nuclear reactions and heat energy, applicant's claims are incomplete in failing to recite the additional critical structure and/or method steps (not found in any one of Westfall, Kinsella et al., or Patterson-1, or Patterson-2, or Patterson-3.) that are actually necessary to produce applicant's indicated heat energy and nuclear reactions.

Claim 1 recites such clauses as "creating thereby a catastrophic diffusion flux of said isotopic fuel within said material" and "means thereby producing said product", the content of which does not inherently follow from the actual elements recited. For example, simply providing a "means for producing a change in the quantity of said isotopic fuel within said material" does not necessarily create a catastrophic diffusion

flux. There is evidently a missing critical step. Thus, the scope of the claims and/or the metes and bounds thereof cannot be determined. Said clauses accordingly raise a question as to the limiting effect of the language therein on the claims (see MPEP 2106.II.C).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1-10, 12-19, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Westfall (U.S. 5,215,631).

Westfall discloses a process and an apparatus for growing crystals by electrodeposition. He teaches that his invention has use in growing palladium, titanium and other metal crystals for "cold fusion" electrodes (e.g., see column 1, lines 36+, column 2, lines 37+, and column 3, lines 32+). His method uses the electrolytic apparatus shown in Fig. 1 comprising a bath (4) between a working electrode 8 (where the crystal growth occurs) and a counter electrode (which replenishes the electrolytic solution's concentration of ions of the to-be-deposited material. The bath is used by passing current between the working and counter electrodes (e.g. see column 4, lines 25+). Westfall further discloses that palladium can be deposited from the more common

aqueous systems (see column 7, lines 25+). Table 1 lists metals that can be grown from an aqueous solution, including palladium, and the more common anion and cation components. He teaches that hydrogen is generated in an aqueous system (e.g. see column 9, lines 32+).

Westfall further discloses the use of orthogonal electric fields as part of the nucleation manipulation techniques for crystal growth control. He states that orthogonal electric fields are generated by the use of "conformal" counter electrodes with configurations such as wire-tubular, sphere-spherical, cube-cubical torus-toroidal, etc. (see column 24, lines 11+).

Westfall also discloses conformal electric fields may be used in combination with one or more nucleation manipulation techniques, such as magnetic fields (see column 24, lines 55+).

Note that applicant's claim language reads on Westfall as follows: a) "isotopic fuel" reads on the hydrogen generated by Westfall's aqueous solution; b) "material" reads on "working electrode"; c) "diffusion barrier" reads on barrier formed by the ions inherently absorbed within the working electrode.

The first electric field must first effect movement of ions from the electrolytic bath towards the working electrode before the orthogonal electric field can effect control of distribution of these ions to form the desired crystal growth. Therefore, the first electric field and its effect reads on applicant's "loading of isotopic fuel into material." The orthogonal electric field reads on "means for producing a change in the quantity of said isotopic fuel."

Note also that since the Westfall's process and apparatus read on applicant's process and apparatus claims, the same can be said regarding applicant's claim language of "creating a catastrophic diffusion flux of said isotopic fuel in said material." Also, there is inherently a temperature change in the system because of the electrolytic process which affects the quantity of isotopic fuel in the material.

Note further that West fall's aqueous solution contains ordinary water, which, in turn, has 0.016% heavy water content (see Etherington, Nuclear Engineering Handbook, p 8-27). This reads on the claim language regarding having deuterium in the isotopic fuel. Westfall inherently also has a means to remove the product, i.e., formed crystal. Again, applicant's claim language reads on such.

16. Claims 1-8, and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Patterson (U.S. 5,318,675) [hereinafter referred to as Patterson-1]), or Patterson (U.S. 5,372,688) [hereinafter referred to as Patterson-2. Either one of Patterson-1 or Patterson-2 discloses in Fig. 2 an electrolytic cell (12) filled with a liquid electrolyte (59) of heavy water, and having electrodes 15 and 16. A plurality of conductive microspheres (36) having a uniform outer palladium coating are positioned within the housing (14). See, for example, Patterson-1, column 3, lines 54+ and column 4, lines 21+. The cell is exercised by a first stage (see Figs. 1 and 2) , which Patterson-1 refers to as a "loading stage" during which a relatively low level current (0.05 amps) is introduced across the electrodes 15 and 16.

During the initial loading, the palladium surface of the microspheres (36) fully absorbs and combines with the hydrogen isotope, i.e., it becomes loaded. This loading takes about two hours under a current flow through the cell of about 0.05 amps (e.g., see column 6, lines 6+).

Following the loading stage, the current level between electrodes 15 and 16 is then incrementally increased. During this time, the temperature of the electrolyte is both monitored and controlled by increasing the flow rate of electrolyte (59) therethrough (see column 6, lines 1+). Note that applicant's claim language of "producing a change in the active quantity of isotopic fuel in material by a change in temperature of the material" reads on either Patterson-1's or Patterson-2's process of "controlling the electrolyte temperature by changing the flow rate." Note that the palladium-coated microspheres are immersed in the electrolyte and any change in the electrolyte temperature inherently changes the temperature of the material.

Since the Patterson-1 or Patterson-2 process and apparatus read on applicant's process and apparatus claims, the same can be said regarding applicant's claim language of "creating a catastrophic diffusion flux of said isotopic fuel within said material." Applicant's claim language, "diffusion barrier" reads on barrier formed by the ions inherently absorbed within the microspheres.

17. Claims 1, 2, 4, 5, 7, 10, 13, 15, 16 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinsella et al.(U.S. 3,682,806). Kinsella et al. disclose a process for electroplating metallic articles with carboxylic film-forming materials utilizing lithium

hydroxide as solubilizer (see Fig. 1 and column 8, 2nd paragraph). Fig. 1 shows the anode (4), which is the material to be coated, a stainless steel cathode (6). An alternative embodiment can have an auxiliary platinum anode (7) and an auxiliary stainless steel cathode (8). The "electrodeposition current" flows from the anode (4) to the stainless steel cathode (6). An auxiliary direct current (referred to as "regeneration current") is applied between the auxiliary electrodes, the direction of the current being orthogonal to the direction of the electrodeposition current (see column 9, lines 65+).

Note that applicant's "isotopic fuel" in the claim language reads on Kinsella et al.'s lithium anions that form on the anode, "material" reads on "anode", "loading of isotopic fuel into material" reads on the "electrodeposition current" and its effect. "change in the active quantity of isotopic fuel within material" reads on the "regeneration current" and its effect. Applicant's claim language, "diffusion barrier" reads on barrier formed by the ions inherently absorbed within the cathode.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Rick Palabrica whose telephone number is 703-306-5756. The examiner can normally be reached on 7:00-4:30, Mon-Fri; 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 703-306-4198. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

RJP
March 19, 2003

SUPERVISORY PATENT EXAMINER